

O I P E 50169
JUN 10 2004
PATENT & TRADEMARK OFFICE

1/7

FIG.1

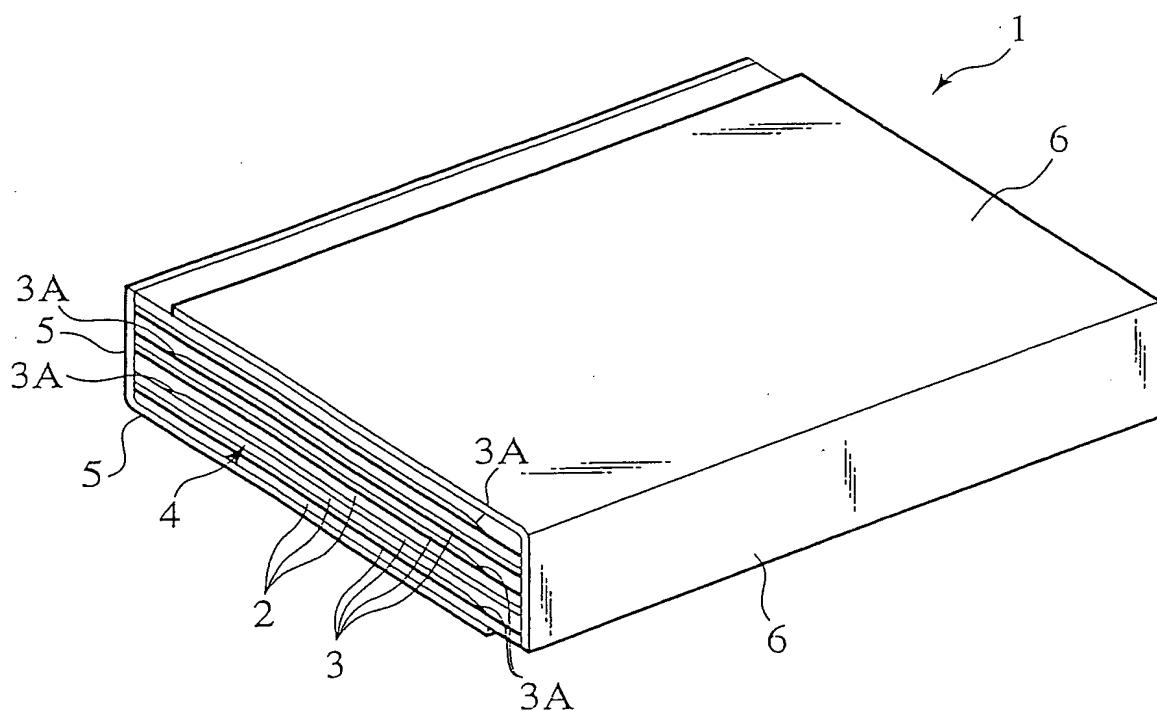


FIG.2

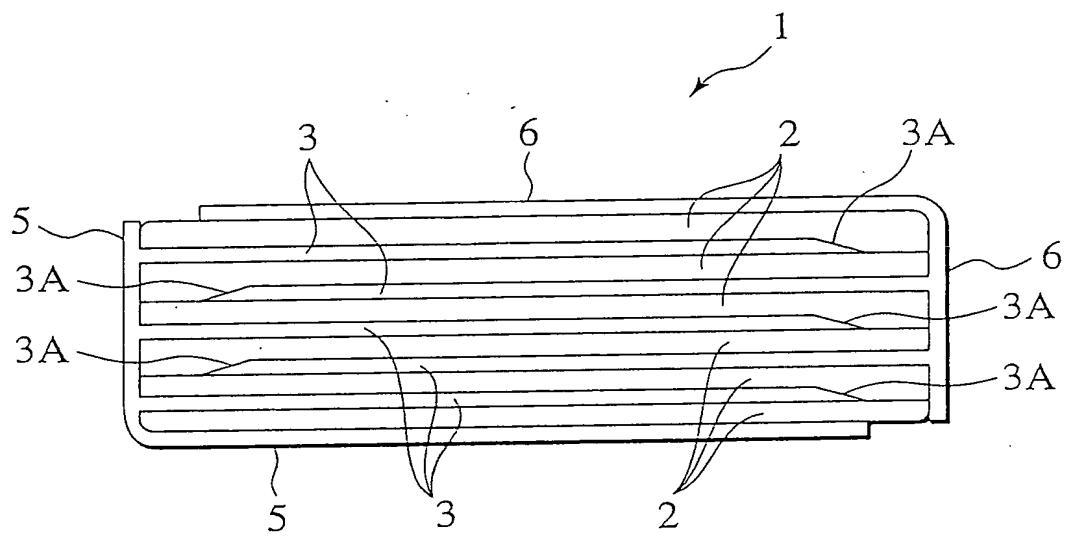


FIG.3

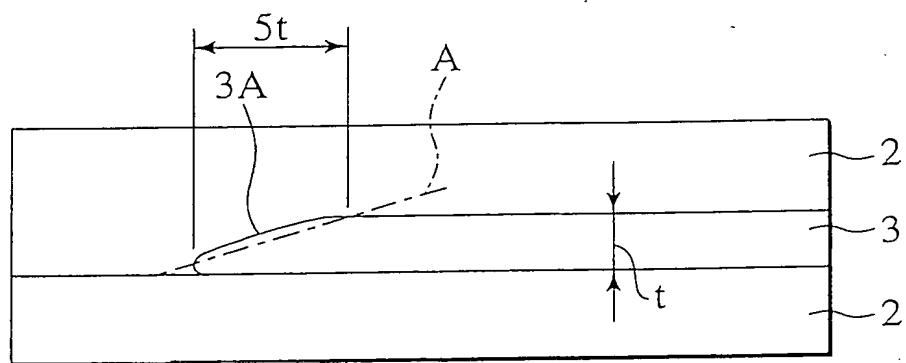


FIG.4

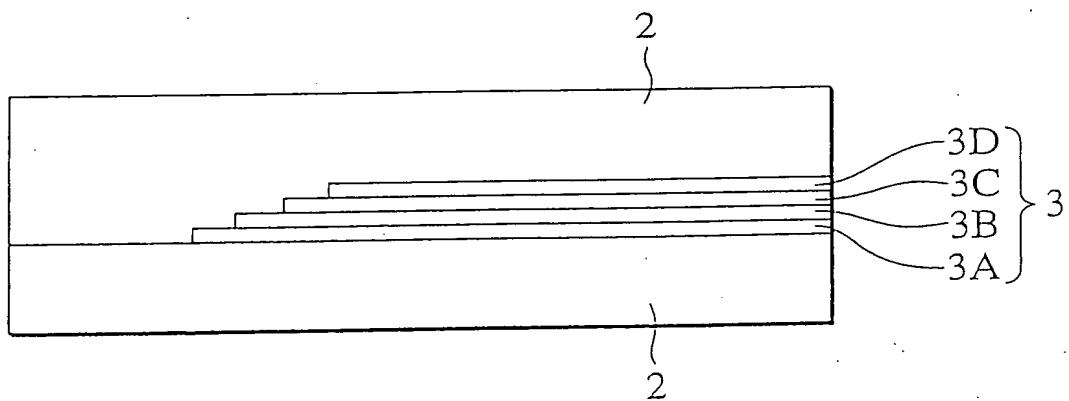


FIG.5

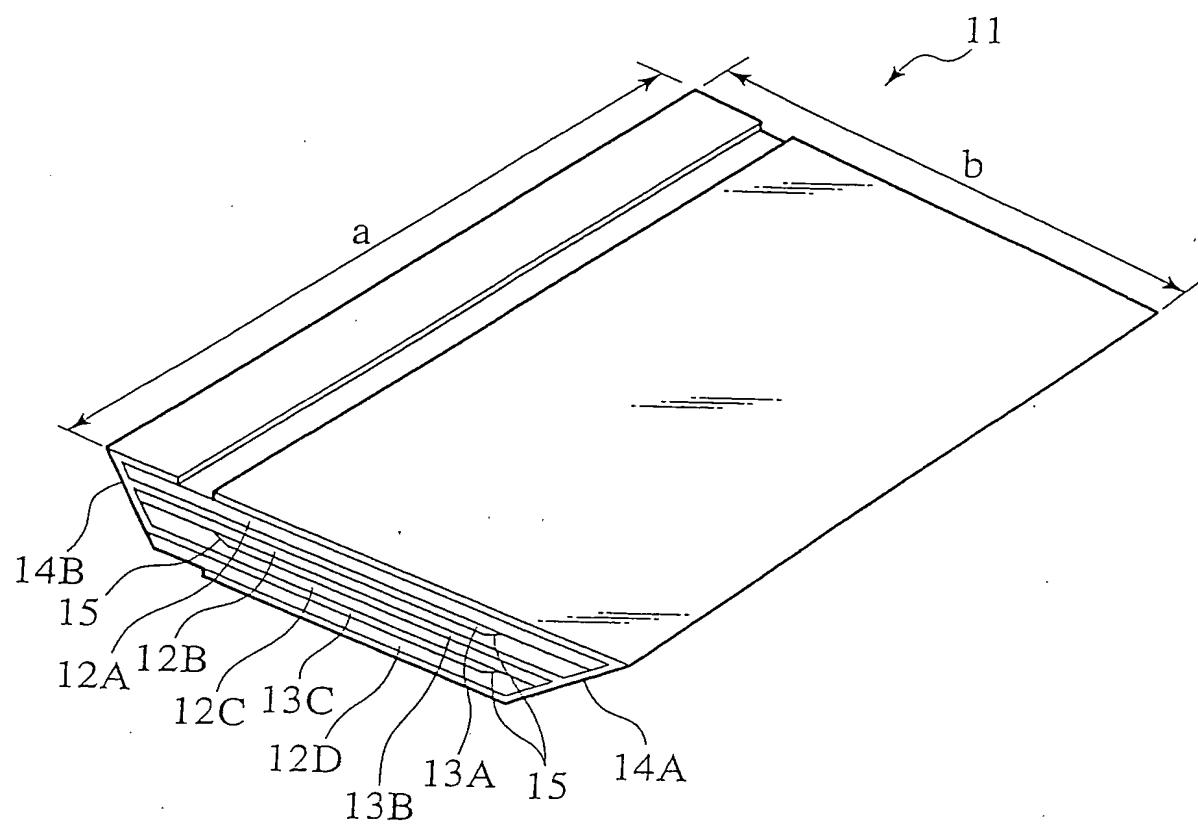


FIG.6

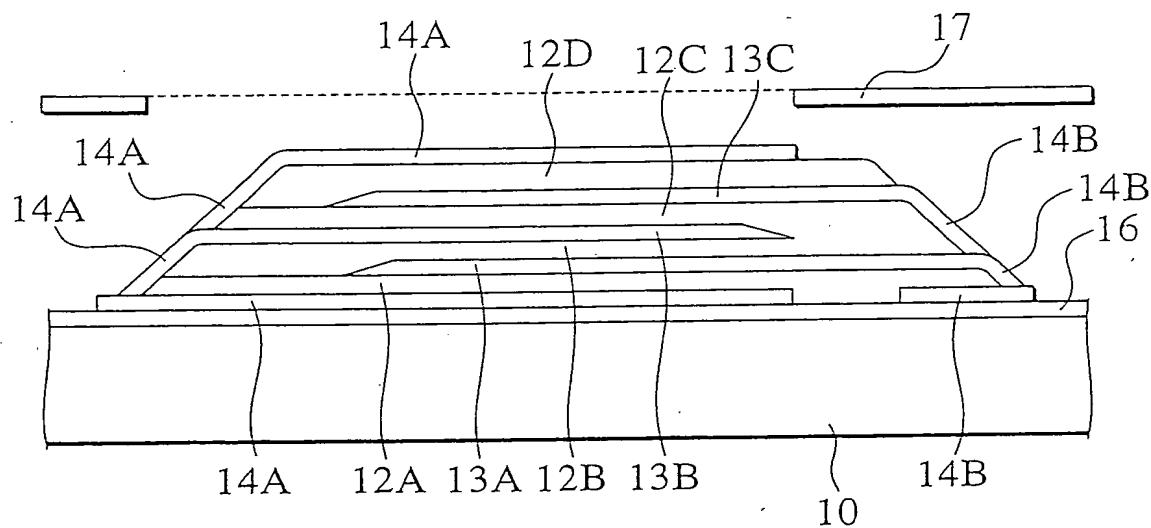


FIG.7

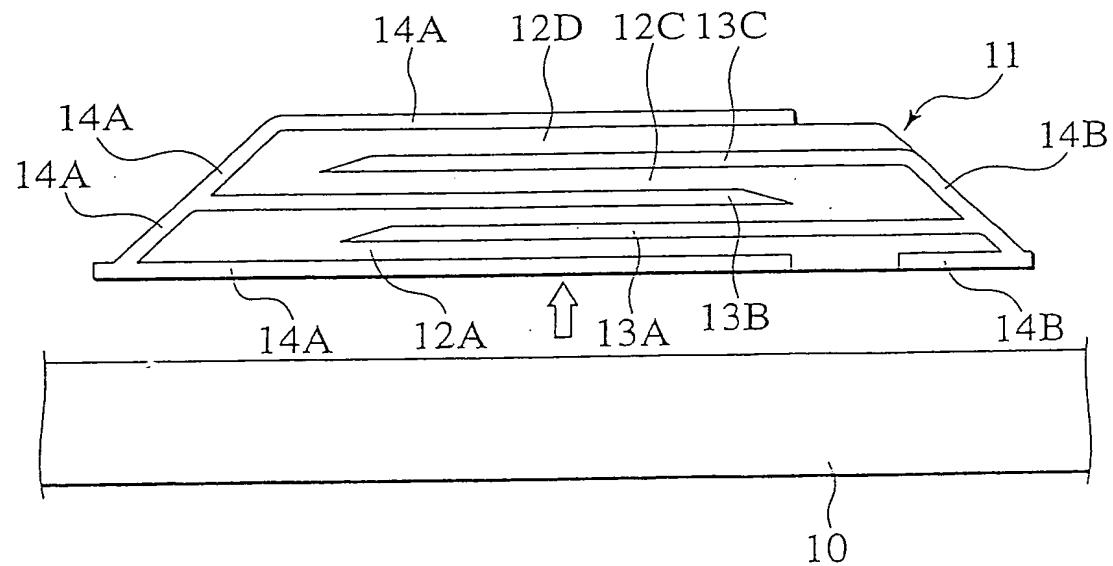


FIG.8

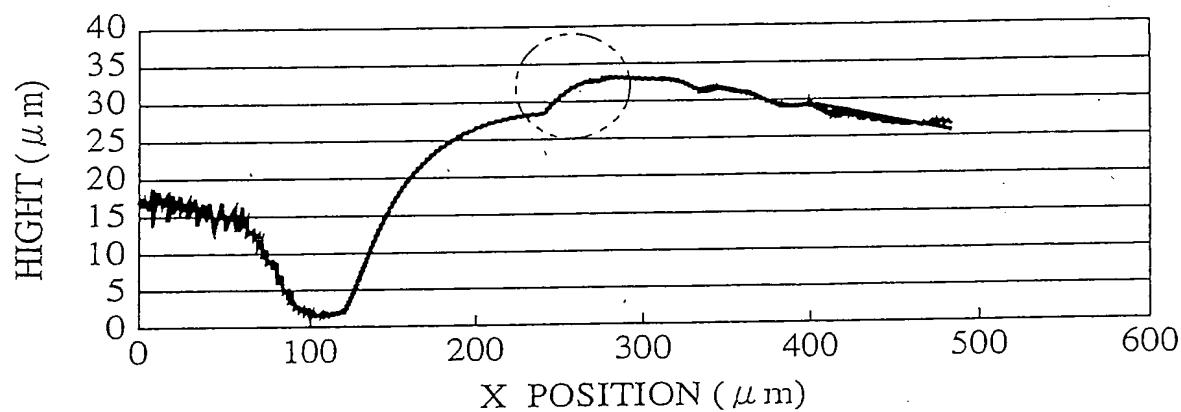


FIG.9

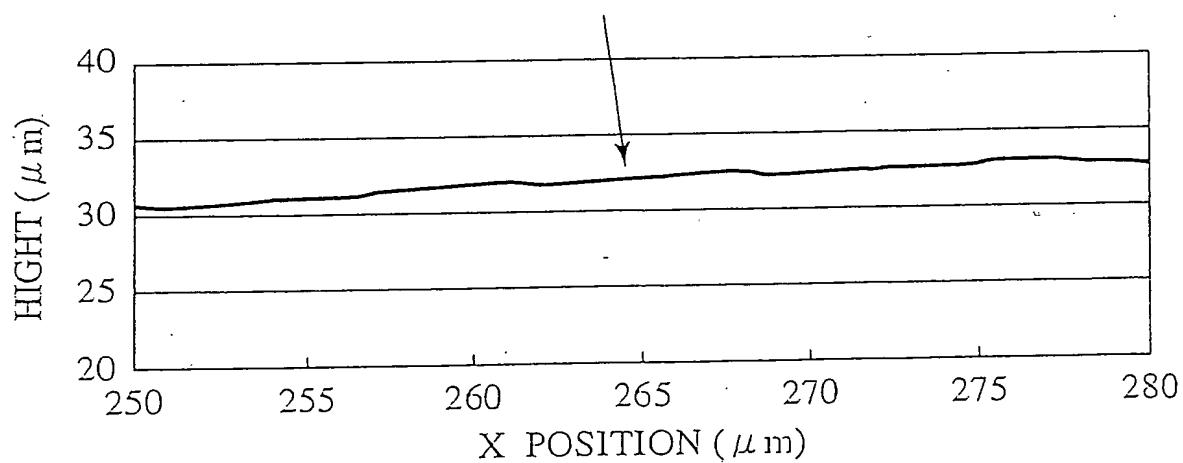


FIG.10

ELECTRODE PASTE PARTICLE DIAMETER, MEAN (μ m)	ELECTRODE PASTE BINDER , PART (wt%)	ELECTRODE PASTE SOLVENT, PART (wt%)	ELECTRODE PASTE VISCOSITY (Pa · sec)	NONFIRED CERAMIC LAYER SURFACE ROUGHNESS (Ra, μ m)	ELECTRODE ANGLE (deg.)
0.050	5.0	10	4200	0.3	35
4.5	5.0	10	50	0.3	1.7
1.5	5.0	25	25	0.3	1.4
1.5	5.0	4.0	3300	0.3	33
1.5	5.0	10	300	0.3	14
1.5	0.7	10	32	0.3	1.8
1.5	12	10	3100	0.3	32

FIG.11

PIEZOELECTRIC / ELECTROSTRICITIVE PASTE		NONFIRED CERAMIC LAYER SURFACE ROUGHNESS (Ra, μ m)	ELECTRODE PASTE VISCOSITY (Pa · sec)	ELECTRODE ANGLE (deg.)
POWDER PARTICLE DIAMETER, MEDIAN (μ m)	BINDER, PART (wt%)			
0.050	5.0	0.090	300	5.0
5.2	5.0	0.60	300	31
0.50	31	0.060	300	3.0
0.50	0.4	0.70	300	33
0.50	5.0	0.10	300	6.0
0.50	5.0	0.60	300	32